## Model Number

**NJ5-18GM-N**

## Features

- **Comfort series**
- **5 mm flush**
- **Usable up to SIL 2 acc. to IEC 61508**

## Accessories

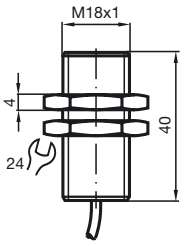
**BF 18**
Mounting flange, 18 mm

**EXG-18**
Quick mounting bracket with dead stop

## Technical Data

| | | |
|---|---|---|
| **General specifications** | | |
| Switching element function | | NAMUR, NC |
| Rated operating distance | $s_n$ | 5 mm |
| Installation | | flush |
| Output polarity | | NAMUR |
| Assured operating distance | $s_a$ | 0 ... 4.05 mm |
| Reduction factor $r_{Al}$ | | 0.21 |
| Reduction factor $r_{Cu}$ | | 0.18 |
| Reduction factor $r_{304}$ | | 0.63 |
| **Nominal ratings** | | |
| Nominal voltage | $U_o$ | 8.2 V ($R_i$ approx. 1 kΩ) |
| Operating voltage | $U_B$ | 5 ... 25 V |
| Switching frequency | f | 0 ... 500 Hz |
| Hysteresis | H | 3 % |
| Current consumption | | |
| Measuring plate not detected | | ≥ 3 mA |
| Measuring plate detected | | ≤ 1 mA |
| **Functional safety related parameters** | | |
| $MTTF_d$ | | 14110 a |
| Mission Time ($T_M$) | | 20 a |
| Diagnostic Coverage (DC) | | 0 % |
| **Ambient conditions** | | |
| Ambient temperature | | -25 ... 100 °C (-13 ... 212 °F) |
| **Mechanical specifications** | | |
| Connection type | | cable PVC , 2 m |
| Core cross-section | | 0.75 $mm^2$ |
| Housing material | | Stainless steel 1.4305 / AISI 303 |
| Sensing face | | PBT |
| Degree of protection | | IP67 |
| Cable | | |
| Bending radius | | > 10 x cable diameter |
| **General information** | | |
| Use in the hazardous area | | see instruction manuals |
| Category | | 1G; 2G; 1D |
| **Compliance with standards and directives** | | |
| Standard conformity | | |
| NAMUR | | EN 60947-5-6:2000<br>IEC 60947-5-6:1999 |
| Standards | | EN 60947-5-2:2007<br>IEC 60947-5-2:2007 |
| **Approvals and certificates** | | |
| FM approval | | |
| Control drawing | | 116-0165 |
| UL approval | | cULus Listed, General Purpose |
| CSA approval | | cCSAus Listed, General Purpose |
| CCC approval | | CCC approval / marking not required for products rated ≤36 V |

## Dimensions

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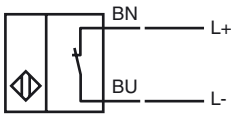
## Electrical Connection

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**Equipment protection level Ga**

| | | |
|---|---|---|
| Instruction | | **Manual electrical apparatus for hazardous areas** |
| Device category 1G | | for use in hazardous areas with gas, vapour and mist |
| EC-Type Examination Certificate | | PTB 00 ATEX 2048 X |
| CE marking | | CE 0102 |
| ATEX marking | | Ex II 1G Ex ia IIC T6…T1 Ga The Ex-related marking can also be printed on the enclosed label. |
| Directive conformity | | 94/9/EG |
| Standards | | EN 60079-0:2012+A11:2013 EN 60079-11:2012 Ignition protection "Intrinsic safety" Use is restricted to the following stated conditions |
| Appropriate type | | NJ 5-18GM-N... |
| Effective internal inductivity | $C_i$ | ≤ 70 nF ; a cable length of 10 m is considered. |
| Effective internal inductance | $L_i$ | ≤ 50 µH ; a cable length of 10 m is considered. |
| General | | The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual.<br>The EC-Type Examination Certificate has to be observed. The special conditions must be adhered to!<br>Directive 94/9/EG and hence also EC-Type Examination Certificates apply in general only to the use of electrical apparatus under atmospheric conditions.<br>The use in ambient temperatures of > 60 °C was tested with regard to hot surfaces by the mentioned certification authority.<br>If the equipment is not used under atmospheric conditions, a reduction of the permissible minimum ignition energies may have to be taken into consideration. |
| Ambient temperature | | Details of the correlation between the type of circuit connected, the maximum permissible ambient temperature, the temperature class, and the effective internal reactance values can be found on the EC-type examination certificate. **Note:** Use the temperature table for category 1 !!! The 20 % reduction in accordance with EN 1127-1 has already been applied to the temperature table for category 1. |
| Installation, commissioning | | Laws and/or regulations and standards governing the use or intended usage goal must be observed.<br>The intrinsic safety is only assured in connection with an appropriate related apparatus and according to the proof of intrinsic safety.<br>The associated apparatus must satisfy the requirements of category ia.<br>Due to the possible danger of ignition, which can arise due to faults and/or transient currents in the equipotential bonding system, galvanic isolation of the power supply and signal circuit is preferable. Associated apparatus without electrical isolation must only be used if the appropriate requirements of IEC 60079-14 are met. If the Ex-related marking is printed only on the supplied label, then this must be attached in the immediate vicinity of the sensor. The sticking surface for the label must be clean and free from grease. The attached label must be legible and indelible, including in the event of possible chemical corrosion. |
| Maintenance | | No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible. |
| **Special conditions** | | The connecting parts of the sensor must be set up in such a way that degree of protection IP20, in accordance with IEC 60529, is achieved as a minimum. |
| Protection from mechanical danger | | When using the device in a temperature range of -60 °C to -20 °C, protect the sensor against the effects of impact by installing an additional enclosure.<br>The information regarding the minimum ambient temperature for the sensor as provided in the datasheet must also be observed. |
| Electrostatic charge | | Electrostatic charges on the metal housing components must be avoided. Dangerous electrostatic charges on the metal housing components can be avoided by incorporating these components in the equipotential bonding. |

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**Equipment protection level Gb**

| | | |
|---|---|---|
| Instruction | | **Manual electrical apparatus for hazardous areas** |
| **Device category 2G** | | for use in hazardous areas with gas, vapour and mist |
| EC-Type Examination Certificate | | PTB 00 ATEX 2048 X |
| CE marking | | CE 0102 |
| ATEX marking | | Ⓔx II 1G Ex ia IIC T6…T1 Ga The Ex-related marking can also be printed on the enclosed label. |
| Directive conformity | | 94/9/EG |
| Standards | | EN 60079-0:2012+A11:2013 EN 60079-11:2012 Ignition protection "Intrinsic safety" Use is restricted to the following stated conditions |
| Appropriate type | | NJ 5-18GM-N... |
| Effective internal inductivity | $C_i$ | ≤ 70 nF ; a cable length of 10 m is considered. |
| Effective internal inductance | $L_i$ | ≤ 50 µH ; a cable length of 10 m is considered. |
| General | | The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The EC-Type Examination Certificate has to be observed. The special conditions must be adhered to!<br>Directive 94/9/EG and hence also EC-Type Examination Certificates apply in general only to the use of electrical apparatus under atmospheric conditions.<br>The use in ambient temperatures of > 60 °C was tested with regard to hot surfaces by the mentioned certification authority.<br>If the equipment is not used under atmospheric conditions, a reduction of the permissible minimum ignition energies may have to be taken into consideration. |
| Maximum permissible ambient temperature $T_{amb}$ | | Details of the correlation between the type of circuit connected, the maximum permissible ambient temperature, the temperature class, and the effective internal reactance values can be found on the EC-type examination certificate. |
| Installation, commissioning | | Laws and/or regulations and standards governing the use or intended usage goal must be observed. The intrinsic safety is only assured in connection with an appropriate related apparatus and according to the proof of intrinsic safety.<br>If the Ex-related marking is printed only on the supplied label, then this must be attached in the immediate vicinity of the sensor. The sticking surface for the label must be clean and free from grease. The attached label must be legible and indelible, including in the event of possible chemical corrosion. |
| Maintenance | | No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible. |
| **Special conditions** | | The connecting parts of the sensor must be set up in such a way that degree of protection IP20, in accordance with IEC 60529, is achieved as a minimum. |
| Protection from mechanical danger | | When using the device in a temperature range of -60 °C to -20 °C, protect the sensor against the effects of impact by installing an additional enclosure. The information regarding the minimum ambient temperature for the sensor as provided in the datasheet must also be observed. |
| Electrostatic charge | | Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding. |

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**Equipment protection level Da**

| | | |
|---|---|---|
| Instruction | | **Manual electrical apparatus for hazardous areas** |
| **Device category 1D** | | for use in hazardous areas with combustible dust |
| EC-Type Examination Certificate | | PTB 00 ATEX 2048 X |
| CE marking | | CE 0102 |
| ATEX marking | | Ex II 1D Ex ia IIIC T135°C Da The Ex-related marking can also be printed on the enclosed label. |
| Directive conformity | | 94/9/EG |
| Standards | | EN 60079-0:2012+A11:2013 EN 60079-11:2012 Ignition protection "Intrinsic safety" Use is restricted to the following stated conditions |
| Appropriate type | | NJ 5-18GM-N... |
| Effective internal inductivity | $C_i$ | ≤ 70 nF ; a cable length of 10 m is considered. |
| Effective internal inductance | $L_i$ | ≤ 50 µH ; a cable length of 10 m is considered. |
| General | | The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual.<br>The EC-Type Examination Certificate has to be observed.<br>Directive 94/9/EG and hence also EC-Type Examination Certificates apply in general only to the use of electrical apparatus under atmospheric conditions.<br>The use in ambient temperatures of > 60 °C was tested with regard to hot surfaces by the mentioned certification authority.<br>If the equipment is not used under atmospheric conditions, a reduction of the permissible minimum ignition energies may have to be taken into consideration. |
| Maximum permissible ambient temperature $T_{amb}$ | | Details of the correlation between the type of circuit connected, the maximum permissible ambient temperature, the surface temperature, and the effective internal reactance values can be found on the EC-type-examination certificate.<br>**The maximum permissible ambient temperature of the data sheet must be noted, in addition, the lower of the two values must be maintained.** |
| Installation, commissioning | | Laws and/or regulations and standards governing the use or intended usage goal must be observed.<br>The intrinsic safety is only assured in connection with an appropriate related apparatus and according to the proof of intrinsic safety.<br>If the Ex-related marking is printed only on the supplied label, then this must be attached in the immediate vicinity of the sensor. The sticking surface for the label must be clean and free from grease. The attached label must be legible and indelible, including in the event of possible chemical corrosion. |
| Maintenance | | No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible. |
| **Special conditions** | | The connecting parts of the sensor must be set up in such a way that degree of protection IP20, in accordance with IEC 60529, is achieved as a minimum. |
| Protection from mechanical danger | | When using the device in a temperature range of -60 °C to -20 °C, protect the sensor against the effects of impact by installing an additional enclosure. The information regarding the minimum ambient temperature for the sensor as provided in the datasheet must also be observed. |
| Electrostatic charge | | Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding.<br>Do not attach the nameplate provided in areas where electrostatic charge can build up. |

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